

R E M A R K S

I. Introduction

Applicants thank the Examiner for withdrawing the prior rejections pursuant to 35 U.S.C. §§ 102 and 112. By the foregoing amendment, independent claims 1 and 40 have been amended to clarify the subject matter recited therein. The attached claim amendments have been effectuated pursuant to 37 C.F.R. § 1.121. It is respectfully asserted that no new matter has been added. Claims 1-4, 8-13, 15-29 and 40 are now pending in the present application. Reconsideration of the present application based on the foregoing amendments and the following remarks is respectfully requested.

II. Rejection under 35 U.S.C. § 103(a) should be withdrawn

Claims 1-4, 8-13, 15-29 and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Canadian Patent No. 2,244,248 to Hunger et al. (hereinafter "Hunger"), in view of U.S. Patent No. 5,972,436 to Walther (hereinafter "Walther"). For the reasons set forth below, this § 103 rejection of amended independent claims 1 and 40, and claims which depend therefrom should be withdrawn.

In order for a claim to be rejected for obviousness under 35 U.S.C. § 103, not only must the prior art teach or suggest each element of the claim, the prior art must also suggest combining the elements in the manner contemplated by the claim. *See Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 934 (Fed. Cir.), cert. denied 111 S.Ct. 296 (1990); *see In re Bond*, 910 F.2d 831, 834 (Fed. Cir. 1990).

Independent claim 1, as amended, relates to a method for producing a boride layer on a surface by plasma boronizing, which comprises the steps of, *inter alia*,

determining an amount of at least one excited boron-releasing gas product selected from excited boron and excited BCI particles in the glow discharge; and

selecting production parameters of the plasma generated in the treatment chamber of the reactor and one or more process parameters selected from at least one of voltage, pulse duty factor, frequency, temperature and pressure, depending on the determined amount of the excited boron-releasing gas product so as to maintain at least one of: at least one of a minimum value and a maximum value of the determined excited boron-releasing gas product, and at least one of a minimum value or a maximum value of a relation of one or more of the determined amount of the excited boron-releasing gas product to another glow discharge product to produce the boride layer on the surface.

Independent claim 40 has been amended to recite similar subject matter. In particular, independent claims 1 and 40 recite the steps of determining an amount of at least one excited boron-releasing gas product selected from excited boron and excited BCI particles, and selecting production parameters of the plasma generated in the treatment chamber of the reactor and one or more process parameters selected from at least one of voltage, pulse duty factor, frequency, temperature and pressure, depending on the determined amount of the excited boron-releasing gas product.

Hunger describes a process for producing wear-resistant boride layers on metal material surfaces using a plasma discharge whereby boron is transferred from the plasma to the metal surface. (See Hunger, Abstract). As asserted by Applicants in the prior Response to the Final Office Action dated January 16, 2003, the portion of Hunger relied on by the Examiner as disclosing a “system for controlling and monitoring operating parameters” provides no further detail (see Hunger, p. 5, lines 16-19), and thus cannot possibly be asserted to teach or suggest the above-described recitations for selecting production parameters of the plasma generated in the treatment chamber of the reactor, depending on the determined amount of the excited boron-releasing gas product so as to maintain particular properties

within the chamber. (See Hunger, p. 5, lines 16-19). In the Office Action, while the Examiner admits that the relied-upon portions of Hunger do not disclose or suggest the limitations of “determining...” and “selecting...”, the Examiner alleges that the “phrasing” of the references “implies” the monitoring recited in the claims. (See Office Action dated July 7, 2003, p. 4, last paragraph). Applicants respectfully disagree with this allegation, and submit that there is no teaching or even remote suggestion of these recitations in Hunger.

Moreover, independent claims 1 and 40 have been amended above to include the recitations of determining an amount of a gas “selected from excited boron and excited BCI particles” in the glow discharge, and selecting “one or more process parameters selected from at least one of voltage, pulse duty factor, frequency, temperature and pressure.” Hunger also fails to teach or even remotely suggest these limitations. Walther does not cure these deficiencies of Hunger to teach or suggest Applicants' claimed invention, nor does the Examiner contend that it does.

Accordingly, at least because one or more of the above limitations of amended independent claims 1 and 40 are not taught or suggested by Hunger, either taken alone or in combination with Walther, the §103(a) rejection of independent claim 1 should be withdrawn. Additionally, because claims 2-4, 8-13 and 15-29 ultimately depend from independent claim 1, these claims also contain the recitations of claim 1, as discussed above. Accordingly, Applicants respectfully assert that claims 2-4, 8-13, and 15-29 are also not taught or suggested by the alleged combination of Hunger and Walther for at least the same reasons as discussed above for amended independent claims 1 and 40. Therefore, Applicants respectfully submit that claims 1-4, 8-13, 15-29 and 40 are allowable over the alleged combination of Hunger and Walther.

Moreover, regarding the rejections of claims 2, 11, 13, 16 and 17 under 35 U.S.C. §103(a) as being unpatentable over Hunger in view of Walther, and further in view of Canadian Patent No. 2,075,299 by Oppel et al. (hereinafter “Oppel”), Applicants respectfully submit that neither Walther nor Oppel cures the above-mentioned deficiencies of Hunger to teach or suggest Applicant's invention as recited in amended independent claim 1 at least because claims 2, 11, 13, 16 and 17 include all recitations of claim 1. Thus Applicants respectfully assert that claims 2, 11, 13, 16 and 17 are allowable over the alleged combination of Hunger, Walther and Oppel.

Additionally, claims 1-4, 8-13, 15-16, 18-21, 24-26, 28-29 and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,677,799 to Hou, in view of Walther. Applicants respectfully submit that amended independent claims 1 and 40 are not taught or suggested by the alleged combination of Hou and Walther at least because such combination fails to teach or suggest the additionally recited features provided in these claims.

Additionally, the Examiner admits that “Hou’s visual determination by noting visible glow discharge is a rough determination.” (See Office Action, p. 7). Even if Hou is properly combined with Walther, the descriptions and disclosures of Hou and Walther are completely different from the recitations for determining and selecting steps provided in amended independent claims 1 and 40.


Accordingly, because the prior art fails to disclose or suggest at least the above-referenced limitations recited in amended independent claims 1 and 40, Applicants submit that dependent claims 1-4, 8-13, 15-16, 18-21, 24-26, 28 and 29 are allowable over the alleged confirmation of Hou and Walther.

III. Conclusion

In view of the foregoing amendment and remarks, favorable reconsideration and allowance of claims 1-4, 8-13, 15-29 and 40 are respectfully solicited. In the event that the application is not deemed in condition for allowance, the Examiner is invited to contact the undersigned in an effort to advance the prosecution of this application.

Respectfully submitted,

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